

NOTES ON WEST INDIAN VERONICELLIDAE

BY H. BURRINGTON BAKER

Veronicella (Tenacipes) tenax, from western Cuba, is described as a new section and species on account of its aberrant anatomy. The penis of *Vaginulus (Sarasinula) plebeius*, from Trinidad, B. W. I., is described and figured. Brief outlines of the Old World genera *Imerinia* and *Filicaulis* are also included.

VERONICELLA (TENACIPES) TENAX, new section and species.

Plate 8, figs. 3-5.

This slug was obtained by Dr. Henry A. Pilsbry during the summer of 1928, from cliffs on the north side of Cueva de Tiburón, Ensenada de San Vicente, Pinar del Rio, Cuba (type locality) and also from similar rock-faces in the mogotes near Viñales, Pinar del Rio. According to his field notes, it lived on the exposed, vertical faces of the cliffs, to which it clung so tenaciously that, without use of a knife, he was unable to dislodge animals that had braced themselves. He noticed that the living slug appeared softer, was far larger (6 inches in length) and secreted a more glutinous mucus than *V. floridana*. Besides, the latter was a more secretive animal, that was usually found, at least during the day, under rocks and boards, especially in the vicinity of cultural conditions.

The following description is made from specimens preserved in alcohol; the anatomy has many features in common with that of *V. floridana* (Leidy) and only divergent details will be noted.

Notum: relatively broad and low; dorsum slightly arched; hyponotum and sole forming a plane surface; back velvety or with small papillae, drab in color, with minute points and small spots of whitish, sometimes blotched (especially in young specimens), with large and irregular patches of black pigment, but without longitudinal bands; hyponotum broad, somewhat lighter and uniform in color. Sole: considerably shorter than notum and completely surrounded by hypo-

notum; relatively narrow, with sides almost parallel; truncate anteriorly and rounded posteriorly; crossed by numerous, fine, transverse grooves; greenish drab. Head and tentacles: deep bluish black. Anus: conspicuous, as in *Leidyula*.

Hermaphroditic duct: as in genus, coarsely convoluted, constricted where it passes into tubular carrefour (called spermoviduct in my 1925 paper); talon only represented by swollen apical loop of carrefour. Uterus: slightly swollen apically into a thick-walled sac, which receives slender oviducal connecting duct from carrefour and duct of albumen gland; principal loop coiled into a dextral spiral with sacculate apical and more slender basal limbs juxtaposed. Spermatheca (fig. 3): sac flattened subspherical, large; stalk medium in length, contractile, not extensively looped or spirally wound. Vagina: short, unswollen, entirely sheathed in body wall; without accessory bursa. Vas deferens: first free region quite stout; second more coarsely convoluted, entering base of verge. Canalis junctor: medium in length, stouter than continuation of vas deferens, joining spermatheca near base of stalk. Penis (figs. 4, 5): relatively very small. Verge: stout cylindrical; chalky-white glans mammilliform, with crescentic orifice on its right dorsal surface; spiral ridges very prominent, left one looped around at about two-fifths length of verge from base; anterior three-fifths with accessory, longitudinal ridges. Vergic retractor: short and stout; lateral margins curled ventrad near insertion around base of verge, so as to form a sheath through which vas deferens enters; origin from body wall about 7 mm. (one-half distance between heart and mid-ventral line) in front of and mesial to pericardium. Dart retractors: two; origins laterad and mesial to that of vergic retractor; branching distally to insert on short basal sheath of dart tubules. Dart-papilla: short, abruptly acuminate. Dart-gland tubules: very numerous (98 counted in type; 94 in a paratype); outer third of them (33 and 37) long (slightly over half length of notum); inner two-thirds (65 and 57) only about one-third as long (one-sixth to one-seventh length of notum); inner and

shorter ones swollen at tips and sometimes bifucate or even trifid.

Pedal nerves: divergent at level of anterior end of pericardium.

DIMENSIONS

	Notum		Sole		Female Opening Distance from	
	Long	Wide	Long	Wide	Ant. end	Foot
Type	100	52(52)	87(87)	17(17)	53(53)	21(4.8)*
Paratypes	96	47(45)	90(86)	18(17)	54(52)	18(5.6)
Viñales	105	50(53)	84(88)	18(19)	52(55)	19(5.3)

*The distance of the female opening from the pedal groove (foot) is expressed as a percentage of the total width of the hyponotum with its reciprocal ("Querindex") in parentheses.

Veronicella tenax is evidently quite closely related to the section *Leidyula* H. B. B. (1925, Proc. Acad. Nat. Sci. Philadelphia 77: 158), but completely lacks the accessory vaginal bursa of that group. Also, its verge develops much stronger, spiral ridges and its dart-papilla possesses about 4 times as many tubules, which are peculiarly differentiated into a long outer and a short inner series. Although this new species agrees with *Veronicella* s. s. in the absence of the accessory bursa, its spirally ridged, small verge and relatively short, stout spermathecal stalk are more similar to these structures in *Leidyula*. In the peculiar truncation of its verge, caused by the transverse loop of the principal (left) spiral ridge, *V. tenax* also distinctly resembles the typical group of *Angustipes*. As it differs from these other groups by such important characters, it is made the type of a new section, *Tenacipes*.

In a recent paper (1928, NAUT. 42: 46), I doubtfully suggested that "If '*Belocaulus sloanei*' does completely lack the vaginal pouch, it would be a species that I have never seen, while, at the same time, I would be compelled to believe that Dr. Hoffmann, in turn, had never examined an adult specimen of *V. floridana*." Dr. Pilsbry's discovery of a new Cuban species, obviously related to *Leidyula*, but without the accessory vaginal bursa, now forces me to admit that the first proposition, at least, seems quite probable; *V. tenax* does

agree with Hoffmann's "*Belocaulus sloanei*" (1925, Jena. Zeitschr. 61: 249) in these particulars, and also in the absence of black notal bands. As the name "*sloanei*" is untenable, further comparison seems unnecessary.

In passing, attention is called to a new synonym of *Leidyula*: *Cylindrocaulides* Strand (1928, Arch. Naturg. Abt. A. 92 [8]: 69), type *Vaginula moreleti* C. et F. Strand apparently launched this substitute for *Cylindrocaulus* Hoffmann with the haphazard hope that he might appear as an "authority" on a subject about which he evidently knew nothing.

VAGINULUS (SARASINULA) PLEBEIUS (Fischer). Plate 8, figs. 1 and 2.

Vs. plebeius Fischer (1868, Jour. de Conch. 16: 145), Nouméa, New Caledonia. *Sarasinula plebeja* G. & H. (1925, Zeitschr. wiss. Zool. 124: 25, fig. 10); G. & H. (1925a, Nova Caledonia, Zool. 3 (3): 357, figs. 2-9; pl. 6, figs. 1-3); Hfm. (1925: 251, pl. 6, figs. 45 i, 2).

Va. dubia Smpr. (1885, Reis. Arch. Phil. 2 (3): 296, pl. 26, fig. 12), St. Thomas; *Vs. dubius* H. B. B. (1925: 179, pl. 6, fig. 27), Antigua.

At the time of my 1925 paper, I had not examined Grimpe and Hoffmann's (1925a) more detailed account of the anatomy of "*S. plebeja*". Recently, Dr. T. D. A. Cockerell has kindly sent me for examination some specimens collected by him at Bourail, New Caledonia. In addition, Mr. W. E.

DESCRIPTION OF PLATE 8

All figures are made with aid of camera lucida. Uppermost scale is for fig. 1 and represents one millimeter; lowest is for figs. 3 and 5 and indicates a length of five millimeters.

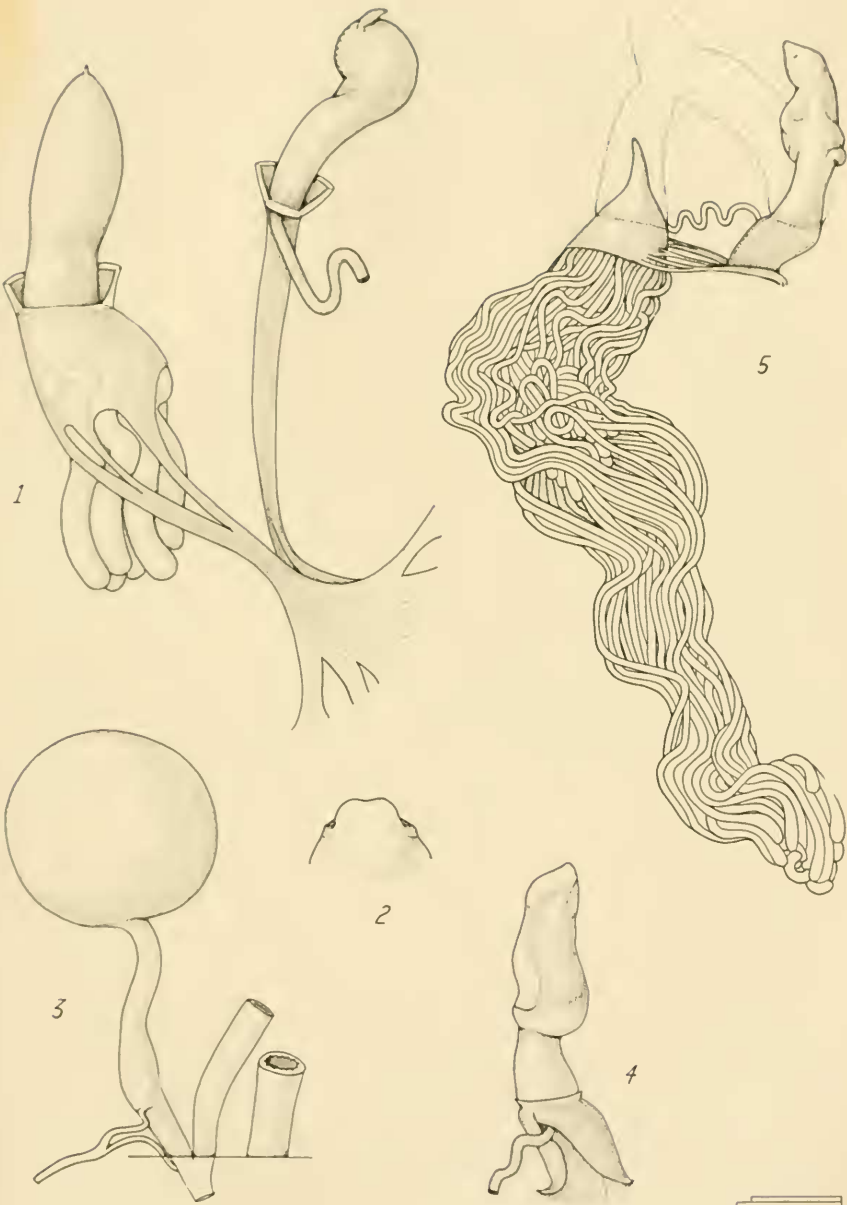
Fig. 1. *Vaginulus (Sarasinula) plebeius* (Trinidad, B. W. I.). Penis and accessories after removal of outer wall of vergie and dart sacs. Vergie and dart-papilla are viewed from their right sides.

Fig. 2. *V. plebeius*. Tip of verge, dorsal view.

Fig. 3. *Veronicella (Tenacipes) tenax* (type, Pinar del Rio, Cuba). Terminations of female genitalia, dorsal view. Horizontal line represents cleft where organs enter body wall.

Fig. 4. *V. tenax*. Vergie and its retractor, turned back and viewed from ventral side.

Fig. 5. *V. tenax*. Penis and accessories after dissection, dorsal view. Outline of penial wall shown by dotted lines.



H. B. Baker: West Indian Veronicellidae

Broadway has contributed a series from Trinidad, British West Indies. A careful comparison of these two lots with the specimens from Antigua shows no significant differences, just as Grimpe and Hoffmann have previously decided. However, the necessity for a trans-Pacific land-bridge to explain this wide distribution seems very dubious; more probably, *Vaginulus plebeius* is an American species, which has been accidentally introduced into the Pacific and Mascarene Islands during recent times.

Also, the verge (fig. 1) in both the New Caledonian and Trinidad specimens shows the characters which I believed distinctive of *dubius* from Antigua. Its shaft is compressed dorsoventrally and is concave on the dorsal side so that its lateral margins, from this view, appear thickened, although actually they are compressed into weak wings, which become almost obsolete on the sides of the rounded head. On either side of the dorsally-directed apex, these wing-like ridges again appear as the outer supports of a prominent lip, which usually hides the external orifice. As viewed in profile, this lip looks like a papilla, but in dorsal (fig. 2) or ventral view, is seen to be a broad, weakly emarginate flap. The single dart-papilla retractor expands posteriad to cover that of the verge; the combined origins are very broad and are redivided into a number of radial bands.

DIMENSIONS

New Caledonia,						
Largest	38	47(18)	97(37)	10(4)	58(22)	47(2.2)
Trinidad,						
Figures (largest)	29	60(17.5)	93(27)	14(4)	59(17)	43(2.3)
Next largest slug	26.5	60(16)	94(25)	17(4.5)	57(15)	50(2)

As *Angustipes* is used here as a subgenus of *Vaginulus*, with *Angustipes* s. s. and *Sarasinula* as sections, a more complete explanation of my position in regard to the prior name, *Imerinia*, seems to be in order. Unfortunately, I have been unable to examine the African species, but Simroth (1913, Voeltzkow, Reis. Ostafrika 3(3): 129-216, pls. 13-17) has described and figured the detailed anatomy of many of them.